

- 1 1. An apparatus for rapidly, deterministically transferring data, the apparatus
2 comprising:
 - 3 a processor configured to process data;
 - 4 a memory configured to store the data; and
 - 5 a boot control module configured to boot the processor with a standard operating
6 kernel under a first selected condition and to reboot the processor with a data transfer
7 kernel under a second selected condition.
- 8
- 9 2. The apparatus of claim 1, wherein the data transfer kernel is configured to support a
10 data save operation.
- 11
- 12 3. The apparatus of claim 2, wherein the data save operation is selected from the group
13 consisting of a storage configuration operation, a transfer process loading operation, a
14 data transfer operation, and a system shutdown operation.
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- 16 4. The apparatus of claim 3, wherein the data transfer kernel is configured to
17 exclusively support the data save operation.
- 18
- 19 5. The apparatus of claim 1, wherein the memory module further comprises data bits
20 for marking data to be saved during a data save operation.
- 21
- 22 6. The apparatus of claim 5, wherein the standard operating kernel is further configured
23 to mark data to be saved during a data save operation.
- 24
- 25 7. The apparatus of claim 1, wherein the data transfer kernel is configured to configure
26 a storage device for specialized data save operations.
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1 8. The apparatus of claim 1, wherein the data transfer kernel is configured to conduct a
2 power down procedure.

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4 9. The apparatus of claim 1, wherein the first selected condition comprises a normal
5 operating state and the second selected condition comprises a loss of power.

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7 10. An apparatus for rapidly, deterministically transferring data to a storage device, the
8 apparatus comprising:
9 a storage device configured to store data;
10 a data transfer kernel configured to support data saving operations; and
11 a computer in communication with the storage device, the computer configured to
12 load the data transfer kernel during a reboot procedure.

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14 11. The apparatus of claim 10, wherein the data transfer kernel is configured to
15 exclusively support devices and processes required to save data to the storage device.

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17 12. The apparatus of claim 10, wherein the data transfer kernel is configured to power
18 down the computer and the storage device.

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20 13. An apparatus for rapidly, deterministically saving data, the apparatus comprising:
21 means for saving data;
22 means for detecting a data save condition; and
23 means for booting a processor with a data transfer kernel, the data transfer kernel
24 configured to save data to the means for saving data.

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26 14. The apparatus of claim 13, further comprising means for configuring the means for
27 saving data for data save operations.

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2 15. The apparatus of claim 13, further comprising means for booting a standard
3 operating kernel for normal operation.

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5 16. The apparatus of claim 13, further comprising means for marking data to be saved
6 during a data save operation.

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8 17. A system for rapidly, deterministically saving data to a storage device, the system
9 comprising:

10 a processor configured to process data;

11 a memory configured to provide volatile storage for the data;

12 a storage device configured to provide non-volatile storage for the data; and

13 a boot control module configured to boot the processor module with a standard
14 operating kernel under a first selected condition and to reboot the processor with a data
15 transfer kernel under a second selected condition.

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17 18. The system of claim 17, wherein the standard operating kernel is configured to mark
18 data in the memory module to be saved by the data transfer kernel during a data save
19 operation.

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21 19. The system of claim 17, wherein the data transfer kernel exclusively supports
22 devices and processes required to save data.

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24 20. The system of claim 17, wherein the data transfer kernel configures the processor for
25 data saving operations.

1 21. The system of claim 17, wherein the data transfer kernel configures the storage
2 device for specialized data saving operations,

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4 22. The system of claim 17, wherein the data transfer kernel is configured to conduct a
5 power down procedure.

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7 23. The system of claim 17, wherein the first selected condition comprises a normal
8 operating state and the second selected condition comprises a loss of power.

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10 24. A method for rapidly, deterministically saving data, the method comprising:
11 detecting a data save condition; and
12 rebooting a processor module with a data transfer kernel.

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14 25. The method of claim 24, further comprising exclusively supporting devices and
15 conducting processes required to save data to a storage device.

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17 26. The method of claim 24, further comprising configuring the storage device to receive
18 data.

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20 27. The method of claim 24, further comprising marking data to be saved by the data
21 transfer kernel.

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23 28. A computer readable storage medium comprising computer readable program code
24 for rapidly, deterministically saving data, the program code configured to:
25 boot a processor module with a data transfer kernel; and
26 transfer data from a memory module to a storage device.
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1 29. The computer readable storage medium of claim 28, wherein the computer readable
2 code is further configured to mark data in the memory module to be saved to the storage
3 device.

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5 30. The computer readable storage medium of claim 28, wherein the computer readable
6 code is further configured to exclusively support devices and processes required to save
7 data to the storage device.